*Day82 LP 1415*

**Geometry ~ *Week 18***

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Thu, Jan 82, 2014

***Total Time***: 70 minutes

**CRS [same]**

* XEI 503 Identify solutions to simple quadratic equations
* XEI 505 Factor simple quadratics (e.g., the difference of squares & perfect square trinomials)
* POWER: XEI 605 Solve quadratic equations

**Objective: SWBAT...**

* Use graphing calculator to find vertex (min/max), and point at any x value (including x=0 for y-int)
* **[same]** *Solve quadratic equations (all signs/coefficients) with high- rigor ACT question stems*

**Agenda**

* (15) Do Now: Big Rocks 5/5/5 review
  + **TG:** attendance, **B:** check HW
  + (5) quick Do Now, (5) modeling skill in Do Now, (5) additional practice
* (5) **B lead** Big Rock answers & quick check
* (15) Review
  + Go over last question from Big Rock – why is there only 1 solution? Why is negative x-value not logical? What does x represent in the word problem (time)?
  + This can be used for calculating any object thrown! For projectiles, if where h is height (feet) & t is time (seconds), a will always be related to gravitational pull (-16 on earth), b will be the starting speed (feet/sec), and c will be the height the object was thrown.
  + Make a problem as a class, ex:
    - Solve with partners – trace & find 0s
  + CFUs:
    - What are advantages of calculator (quicker, couldn’t factor)
    - What are the two values where x=0?
    - When will the ball hit the ground? (What is the height when the ball hits the ground?)
    - Why couldn’t the other zero be a solution?
  + Hook: what other information might we want to find?
    - How high did the ball go at its highest point?
    - How high was it at a particular time (ex: after 1 sec)?
* **(15) graphing calculators, part 2**
* **V. Finding vertex (min/max)**
  1. Graph
  2. Determine if you are looking for a minimum value (parabola opening upward… smiling) or maximum value (parabola opening downward… frowning) – **CFU**: all thrown objects will have which, min or max? Because they’re what type of parabola?
  3. 2nd + TRACE (to get CALC)
  4. Choose option 3: minimum or 4: maximum
  5. Left bound? Use 🡨 arrows to move cursors left of the vertex. ENTER.   
     *(Notice that at times you won’t be able to see the cursor. Why?)*
  6. Right bound? Use 🡪 arrows to move cursors right of the vertex. ENTER.
  7. Guess? ENTER.
* **VI. Finding point at any x-value (time)**
  1. 2nd + TRACE (to get CALC)
  2. Choose option 1: value
  3. Enter X value of 1 (one second, in this case) & hit 2
  + CFU: what should the value be if x=0? (The height the ball was released at)
* (20) Practice
  + Split Class
    - B at side board giving more examples
    - TG with groups working independently
  + Start with partner work – whoever feels more confident does 1st problem, other partner does 2nd problem
  + Alternate 4 min partner, 4 min independent
  + About every cycle of 8 min, throw in a CFU from a problem most people got to, but going beyond the question they answered (different x value, why max not min, what would happen if a value were reversed – pos instead of neg, etc)

* (5) Exit Slip (below)

***Exit Slip*** (on graph paper):

***(From Wednesday for reference: A weak martian throws a space ball, which follows a path , where y is the height & x is the time.***

1. Graph using your calculator. What are the solutions(y=0)?

2. Justify using factoring.

3. *Challenge:* When did the space ball hit the ground? Explain why there are two solutions to the quadratic, but only one solution to the question.

**Using Wed’s exit slip, add…**

4. What is the vertex of the ball’s parabola? Is this a min or max?

5. What is the height of the ball at 1 second?

6. If the martian released the ball at head-height, exactly how tall is the alien?

7 (*new problem*) If the quadratic equation has 3 and 5 as its unique solutions, what is the b value?